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ABSTRACT

One of the issues facing educators is the increasing number of nontraditional students appearing in the college classroom. Recent conceptualizations of adult reasoning have suggested that there are qualitative differences in reasoning from young to late adulthood. The objective of this study was to examine cognitive differences rather than deficits among adult learners. Twenty-five young adults (mean age 19.8 years), 23 middle-aged adults (mean age 34.8 years), and 22 older adults (mean age 66.5 years) were presented with 12 problems which provided three types of interpretative context: (1) little interpretative context (formal tasks); (2) a richer context which described marital relations and work (adult relevant tasks); and (3) a rich context which described retirement, relocation, etc. (older adult relevant tasks). Subjects were asked to provide information related to the perceived relevancy of each problem to their own lives. Demographic information was also obtained in order to assess health, education, marital status, income, and life style. Qualitative level scores were assigned by two independent raters. The scores assigned for each task type were then examined by separate stepwise multiple regression analyses. In general, the analyses indicated that subjects who were male, older, and had more education were more likely to respond at a higher level than were other subjects. These results suggest educational implications for the college classroom which increasingly includes individuals of diverse ages and backgrounds. (Author/NB)

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Higher Education and Cognitive Developmental Changes in Adulthood: An Integration of Logic and Experience

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Running head: CHANGES IN ADULT REASONING

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Abstract

One of the issues facing educators is the increasing number of nontraditional students appearing in the college classroom. Recent conceptualizations of adult reasoning have suggested that there are qualitative differences in reasoning from young to late adulthood. The objective of this study was to examine cognitive differences rather than deficits among adult learners. Twenty-five young adults (mean age 19.8 years), 23 middle-aged adults (mean age 34.8 years) and 22 older adults (mean age 66.5 years) were presented with 12 problems which provided three types of interpretative context: little interpretative context (formal tasks); a richer context which described marital realtions and work (adult relevant tasks); and a rich context which described retirement, relocation, etc. (older adult relevant tasks). Subjects were asked to provide information related to the perceived relevancy of each problem to their own life. Demographic information was also obtained in order to assess health, education, marital status, income, and life style. Qualitative level scores were assigned by two independent raters. The scores assigned for each task type were then examined by separate stepwise multiple regression analyses. In general, the analyses indicated that subjects who were were male, older and had more education were more likely to respond at a higher level than other subjects. These results were discussed in relation to educational implications for the college classroom which increasingly includes individuals of diverse ages and backgrounds.

Cognitive Developmental Changes In Adult Reasoning: On the Integration of Logic and Experience

Many campuses are experiencing a growth in the size of the non-traditional student population (Peterson, 1981). The major core of this group is comprised of middle-aged and elderly adults, and one of the issues facing educators is whether these students are as intellectually capable as their younger counterparts (Wass & Olejnik, 1983). The objective of this study is to describe qualitative differences in adult reasoning from young to late adulthood. The reasoning displayed by older adults is perhaps more adaptive than previously described, and may therefore be different rather than deficient from the reasoning of younger adults.

Previous interpretations of adult cognitive development have been shaped by what Labouvie-Vief (1980) calls a linear cumulative view. Current views (Arlin, 1975; Labouvie-Vief, 1982; Riegel, 1973) have proposed a nonlinear view of adult cognitive change. Labouvie-Vief (1984) suggests that adult adaptation results from a trade-off between the systematic application of pure logic and a pragmatic type of reasoning. This mature reasoning style reflects a subordination and integration of pure logic to the consideration of relevant personal experiences and problem meaningfulness as solutions are considered. Cognitive regression, thought to be applicable to older adults, may thus result from a qualitative reorganization of cognitive abilities during adulthood.

In order to provide empirical support for this integration of

logic and experience in adulthood, Labouvie-Vief, Adams, Hakim-Larson, and Hayden (1983) presented groups of young and middle-aged adults, and adolescents with syllogism-like problems. Two types of interpretive contexts were provided by the problems, contextually relevant adult problems concerned marital relations, career choice, etc., while contextually formal problems were devoid of adult-relevant context. Major differences in the performance of adults and adolescents were demonstrated by the adults' increased awareness that the premises of a problem are subject to a variety of interpretations and that personal perspective may influence the formulation of a problem's solution. These results are consistent with the findings by previous researchers (eg. Denney & Palmer, 1981; Sinnott, 1975) that older learners perform best on relevant, real life problems.

The present study further examined the influence of contextual relevance on adult problem-solving, with the assumption that the integration of pure logic and experience is characteristic of older adults. This study extends the scope of previous research through the inclusion of problems that are contextually relevant for older adults (e.g., retirement). In summary, this study compared older, middle-aged, and young adults as they responded to contextually relevant problems for individuals in these age groups.

Method

Subjects. Twenty-seven males and 43 females participated in this study. Twenty-five young adults (mean age 19.8 years), 23 middle-aged adults (mean age 34.8 years) and, 22 older adults (mean age 66.5

years) were assigned to each age group. Demographic information was obtained to assess health, education, marital status, income, and life style.

Procedure. Each of the subjects was interviewed individually by a trained experimenter either in a quiet laboratory room or in their own home. Subjects were asked to verbalize their responses to each of 12 problems and then to rate each problem's relevance to their own life on a five point scale. The demographic questionnaire was then administered.

Tasks. Three types of tasks each having four problems were administered to each subject. Following Labouvie-Vief et al. the task types differed in the type of interpretative context provided. Formal tasks presented dilemmas in which little interpretative context was present:

> Leslie has been sorting mail at the post office for several years. She knows that if there is either a number 5 or a number 7 in the zipcode, then there is a number 3 in the zipcode. She comes across an envelope with a number 5 in the zipcode.
>
> Is there a number 3 in the zipcode?
>
> How certain are you of your answer?

Adult relevant tasks provided a richer interpretative context which described marital relations and work:

> Janet works hard in her job as an executive assistant. She hopes to get a raise from her boss. Her boss has told her that

if she doesn't get excellent ratings in all facets of her job at year's end she will not get a raise. Janet receives excellent ratings in all facets of her job except one at year's end.

Does Janet get the raise?

How certain are you of your answer?

Older-adult relevant tasks provided a rich interpretive context that described retirement, relocation, intergenerational family relations, and age-related physical disabilities:

Mary often takes care of her grandchildren, Sue and Donnie. Linda, Mary's daughter, frequently calls upon her mother to take the kids with little advance notice. Mary has warned Linda that the next time she fails to give her at least one day's notice she will not babysit the children. Linda calls her mother and asks if she can drop off the children in an hour so that she and her husband can go to a meeting.

Does Mary agree to babysit the children?

How certain are you of your answer?

The sequence in which the task types were administered was random with the restriction that at least one problem of each task type should appear in each of three blocks of four problems. Pilot data had shown that each of the tasks identified as formal, adult-relevant, and older adult-relevant were so designated by 75% of 275 subjects surveyed.

Results and Discussion

As an inital step in the analysis tape recordings of the subject's responses to each problem were scored by two independent

raters. Briefly, subject responses were classified into one of five qualitatively distinct levels according to the procedure reported by Labouvie-Vief et al., (1983). The lowest level corresponded to an answer which was oblivious to alternative solutions, and which indicated a failure to consider one's personal role as interpreter of a problem. On the opposite extreme was the highest level in which responses reflected a multiplicity of possible solutions, coupled with a realization that the perspective with which one interpreted the problem was relevant. Pragmatic considerations were paramount at this level. Interrater agreement was uniformly high across all task types with the average being 86%.

Qualitative level scores assigned by each rater for each subject were averaged across each task type. Mean qualitative level scores and standard deviations for each age group by task type are depicted in Table 1. In order to examine these data separate stepwise multivariate regression analysis were conducted for each task type. Qualitative level scores served as the dependent variable while demographic variables (e.g., age, gender, educational level) and problem relevancy ratings were the independent variables in each analysis. The results of these analyses are presented in Table 2.

For contextually formal tasks these results indicate that higher level responses were likely to occur among subjects having more education and who rated the problems as less relevant. Age, educational level, and gender were significant predictors of performance on the adult-relevant and older adult relevant tasks. These findings

reflect the fact that subjects who were male, had higher education levels, and who were older responded at a higher qualitative level than other subjects. Of particular interest was the finding that problem relevancy was significantly related to performance on the older adult relevant problems.

These findings were interpreted as supporting the theoretical views of Labouvie-Vief (1982), that adulthood is characterized by a subordination of pure logic to personal and pragmatic considerations. Subjects having greater personal experience by virtue of being older and more highly educated responded at a higher level. However, in the older age groups the majority of subjects having these characteristics were male.

These findings have important implications for educators of nontraditional students. Young adults generally fail to integrate formal logic with personal experience while reasoning about different types of problems. Young adult learners do not understand that logical reasoning is always embedded in personal contexts. Conversely, the reasoning of middle-aged and older adult learners reflects the integration of formal logic with personal experiences. The older learners understand that the application of pure formal logic does not guarantee a realistic solution to complex real life problems. Thus, post-secondary educators of nontraditional students should assist students in grounding theoretical issues in experiential contexts, thereby modeling mature and adaptive reasoning styles for all adult learners.

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Table 1

Means and Standard Deviations (in parentheses) of Qualitative Level Responses by Subjects in each Age Group on each Task Type.

	Task Type		
Age	Formal	Adult-Relevant	Older Adult-Relevant
Young	2.10 (0.89)	2.47 (0.89)	2.88 (0.70)
Middle-age	3.02 (1.00)	3.61 (0.74)	3.67 (0.72)
Older	2.16 (1.28)	3.06 (1.18)	3.10 (0.92)

Table 2

Beta Values, F Statistics, and Associated Probability Values for each Variable Selected in each Stepwise Regression Analysis Conducted for each Task Type.

	Beta Value	F	$p \geq F$
Formal Task Variables			
Relevancy Rating	0.24	5.05	.03
Educational Level	0.67	26.05	.01
Adult-Relevant Variables			
Age	0.05	31.98	.01
Gender	-1.04	9.97	.01
Educational Level	0.98	18.51	.01
Older Adult-Relevant Variables			
Relevancy Rating	-0.19	4.09	.05
Age	0.03	11.98	.01
Gender	-0.41	4.22	.04
Educational Level	0.47	14.28	.01